

State of California
AIR RESOURCES BOARD

Small Off-Road Engine Evaporative Emission System Components
Executive Order Q-14-007

DSM Engineering Plastics
Innovative Products

WHEREAS, Pursuant to California Health and Safety Code, sections 39600, 39601, and 43013, the California Air Resources Board (ARB) has established a certification process for evaporative emission system components designed to control gasoline emissions from small off-road engines, as described in California Code of Regulations, Title 13, Section 2767.1;

WHEREAS, Pursuant to California Health and Safety Code, section 43013, ARB has established criteria and test procedures for determining the compliance of evaporative emission system components with the design requirements in Cal. Code Regs., Title 13, Section 2754;

WHEREAS, Pursuant to Cal. Code Regs., Title 13, Section 2767.1, ARB Executive Officer may issue an executive order (EO) if he determines that the small off-road engine evaporative emission system component or innovative product conforms to the applicable performance requirements set forth in Cal. Code Regs., Title 13, Sections 2754 and 2755; and

WHEREAS, Pursuant to California Health and Safety Code, Sections 39515 and 39516, ARB Executive Officer issued EO G-05-008 delegating the Chief of ARB's Monitoring and Laboratory Division (MLD) authority to certify small off-road engine evaporative system components and innovative products.

NOW, THEREFORE, I, Michael T. Benjamin, Chief of MLD, find that fuel tanks produced using DSM Engineering Plastics Icorene® 7620 Fuel Lock and following the process and material specifications set out in Attachment A, constitute innovative fuel tanks pursuant to Cal. Code Regs., Title 13, Section 2767(c). Fuel tanks produced following DSM Engineering Plastics process and material specifications are hereby deemed equivalent to those tanks listed in Cal. Code Regs., Title 13, Section 2752(a)(5). This finding is based on DSM Engineering Plastics demonstration that such fuel tanks have a permeation rate less than 1.5 grams per square meter per day set forth in Cal. Code Regs., Title 13, Section 2754, when tested at a constant temperature of 40 °C pursuant to ATP-10-001 using an approved test fuel of CE10 certification fuel.

IT IS ORDERED AND RESOLVED that no tank permeation data is required to be submitted in the certification process for equipment using the DSM Engineering Plastics rotational molded fuel tanks.

IT IS ORDERED AND RESOLVED that all fuel tanks made from DSM Engineering Plastics Icorene® 7620 Fuel Lock with minimum and average wall thicknesses equal to or greater than the value listed in Table 1 incorporated herein, are certified for use in small off-road equipment.

Table 1
Specifications for DSM Engineering Plastics Icorene® 7620 Fuel Lock
Rotational Molded Fuel Tanks

Minimum Wall Thickness (millimeters)	Average Overall Tank Thickness (millimeters)
2.05	3.59 or greater

IT IS FURTHER ORDERED that equipment manufacturers utilizing DSM Engineering Plastics Icorene® 7620 Fuel Lock for fuel tanks shall provide warranty to purchasers of the fuel tanks. The warranty must conform to the requirements of Cal. Code Regs., Title 13, Section 2760.

IT IS FURTHER ORDERED that the certified Icorene® 7620 Fuel Lock rotational molded fuel tanks shall be installed in accordance with the manufacturer's installation and use instructions for the tanks. A copy of this EO and installation and use instructions for the fuel tanks shall be provided to manufacturers purchasing DSM Engineering Plastics Icorene® 7620 Fuel Lock rotational molded fuel tanks for installation on small off-road engines and equipment introduced into commerce in California.

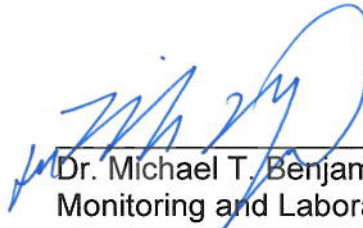
IT IS FURTHER ORDERED that DSM Engineering Plastics Icorene® 7620 Fuel Lock rotational molded fuel tanks shall be clearly identified by a permanent identification that allows ARB to identify the manufacturer's name, EO number, and model number.

IT IS FURTHER ORDERED that any modification of the DSM Engineering Plastics approved process and material specifications for producing Icorene® 7620 Fuel Lock rotational molded fuel tanks is prohibited. Any alteration or modification of the process or material specifications set out in Attachment A of this EO will require the manufacturer to apply for a new EO.

IT IS FURTHER ORDERED that the DSM Engineering Plastics Icorene® 7620 Fuel Lock rotational molded fuel tanks shall be compatible with fuels in common use in California at the time of certification and any modifications to comply with future California fuel requirements shall be approved in writing by the Executive Officer or the Executive Officer's delegate.

IT IS FURTHER ORDERED that the innovative product certification of the DSM Engineering Plastics Icorene® 7620 Fuel Lock rotational molded fuel tanks can be referenced in certification applications for small off-road engines and equipment that use small off-road engines unless the Executive Officer finds that the DSM Engineering Plastics Icorene® 7620 Fuel Lock rotational molded fuel tanks no longer meet the performance requirements set forth in Cal. Code Regs., Title 13, Section 2754, when tested pursuant to Cal. Code Regs., Title 13, Section 2765.

Executed at Sacramento, California, this 8th day of October 2014.

A handwritten signature in blue ink, appearing to read "Michael T. Benjamin", is written over a horizontal line.

Dr. Michael T. Benjamin, Chief
Monitoring and Laboratory Division

Executive Order Q-14-007
Attachment A

**DSM Engineering Plastics Icorene® 7620 Fuel Lock
Process and Material Specifications**

Attachment A

Rotomolding Conditions for ICORENE® 7620 Fuel Lock

Drying

ICORENE® 7620 FUEL LOCK is supplied in sealed bags. A drying step is necessary only if the original packaging has been damaged or left open. ICORENE® 7620 FUEL LOCK should be dried in a ventilated oven at a temperature of 80°C for 2 to 4 hours.

Processing Temperatures

An oven temperature range of 350 °C – 400 °C is used to rotomold ICORENE® 7620 FUEL LOCK. As ICORENE® 7620 FUEL LOCK requires a high PIAT (peak internal air temperature) to fully sinter, it is not recommended to use oven temperature below 350 °C in order to reduce cycle time and avoid oxidation.

Rotomolding Cycle

1. Rotation speed

No special restrictions are recommended for rotation speed. The rotation conditions used to mold polyethylene can also be used for ICORENE® 7620 FUEL LOCK. The rotation speed has to be defined as a function of the geometry of the mold. For instance, the speeds to rotomold a cube containing 1.3 kg of ICORENE® 7620 FUEL LOCK are: main rotation: 5, secondary rotation: 3.

2. Atmospheric conditions

ICORENE® 7620 FUEL LOCK requires processing using an inert atmosphere (typically nitrogen) to prevent degradation. The inert atmosphere should be used throughout the cycle to avoid the introduction of air (oxygen) inside the mold.

3. Heating cycle

The best densification of a part made in ICORENE® 7620 FUEL LOCK is achieved for a peak internal air temperature, PIAT, of 250 ± 5 °C, therefore it is recommended using an oven temperature above 350 °C to reduce cycle time and oxidation.

4. Cooling cycle

As ICORENE® 7620 FUEL LOCK is a semi-crystalline thermoplastic, it is important to cool constantly the mold once removed from the oven to avoid warpage and shrinkage problems.